

7. The new series of probable hydrogen lines in ζ Puppis most likely represents the effect of a transcendental temperature. This and the well-known series are in all probability of the subordinate type, the lines of the principal series not yet having been identified in stars.

8. There is evidence which points to a higher temperature for ζ Puppis than for Bellatrix.

9. The behaviour of certain lines suggests that Bellatrix may be taken as a type of the hottest stars, while the behaviour of others seems to indicate that ϵ Orionis should be regarded as a star of the very highest temperature, exception being made of ζ Puppis. There are not yet sufficient data to enable a final statement to be made.

“A Maya Calendar Inscription, interpreted by Goodman’s Tables.” By ALFRED P. MAUDSLAY. Communicated by F. DUCANE GODMAN, F.R.S. Received April 2,—Read June 17, 1897.

[*Introductory Note.*]

Our knowledge of the Maya Calendar is chiefly derived from the writings (A.D. 1566) of Diego de Landa, Bishop of Yucatan, who not only gave some account of the divisions of time in use among the Mayas, but also copied, somewhat roughly, in his manuscript the signs employed to represent the eighteen named months, and the twenty named days into which each month was divided.

Landa’s statements are, however, by no means clear, and there has been much discussion both as to their correctness in themselves and as to the interpretation which has been given to them; moreover, it has been found difficult in some instances to identify the day and month signs given by him with those used in the Dresden Codex and the few Maya manuscripts which have been preserved, and still more difficult to identify them with the signs used in the carved inscriptions.

In the accompanying paper an examination is made of a recently discovered inscription, by the aid of calendar tables prepared by Mr. J. T. Goodman, and published with an explanatory essay in the ‘*Biologia Centrali-Americana*.’ These tables consist of a chronological and an annual calendar. The chronological calendar is based on the Ahau, a period of 360 days, and is divided thus:—

20 days	.....	1 chuen
18 chuens	.....	1 ahau* (360 days)

* It is unfortunate that the *ahau*, or period of 360 days, bears the same name as one of the twenty days of the Maya month, and that the *chuen*, or twenty-day period, bears the name of another day of the month.

20 ahaus	1 katun
20 katuns.....	1 cycle
13 cycles	1 great cycle
73 great cycles	1 grand era

The annual calendar is divided into eighteen named months, each consisting of twenty named days, and one short month (named Uayeb) of five days.

The twenty named days of the month are numbered continuously from 1 to 13, so that if the first-named day of the month has the number 1 attached to it, the last-named day of the month will be numbered 7 ($13+7=20$), and the first day of the next month will be numbered 8, and so on.

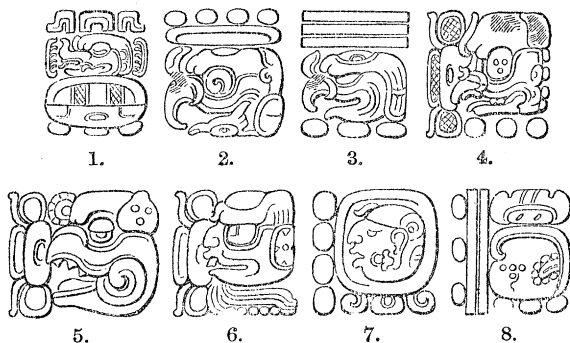
There are fifty-two annual calendars in a calendar round, and at the end of the 52nd year the series is repeated.

All the dates and reckonings found on the monuments which can be made out by the aid of these tables are expressed in Ahaus, Katuns, &c., and not in years; but Mr. Goodman maintains that the true year was known to the Mayas, and that it is by the concurrent use of the chronological and annual tables that the dates carved on the monuments can be properly located in the Maya Calendar.

All the dates which have as yet come under notice fall within the three Great Cycles, numbered by Mr. Goodman the 53rd, 54th, and 55th.

The following extract from an article in 'Nature' (July 8, 1897) gives a good example of the manner in which a date is expressed:—

"I called attention, some years ago, to the fact that the greater number of the carved inscriptions commenced with easily recognised series of glyphs with numerals or faces attached to them, which I called the Initial Series. Mr. Goodman now shows that the Initial Series expresses a date thus:—



(1) The Great Cycle sign. (2) The Cycle. (3) The Katun. (4) The Ahau.
(5) The Chuen. (6) The Day. (7) The named day. (8) The named month.

As has been long known, each bar counts as five, and each dot as a unit. (The roundish marks *under* the glyphs are not part of the numerical series.)

"The signs in front of the Ahau, Chuen, and Day signs denote a 'full count' of those periods. The date thus reads:—

- (1.) 54th..... great cycle.
- (2.) 9th..... cycle.
- (3.) 15th..... katun.
- (4.) 'Full count' ahaus.
- (5.) 'Full count' chuens.
- (6.) 'Full count' days.
- (7.) 4 Ahau (day).
- (8.) 13 Yax (month).

"A reference to Mr. Goodman's chronological calendar shows that the 15th Katun of the 9th Cycle of the 54th Great Cycle commences with the day 4 Ahau, the 13th day of the month Yax, the date which is here given in the inscription. The combination 4 Ahau 13 Yax can only occur once in a period of fifty-two years.

"One of Mr. Goodman's discoveries is the system on which the Mayas numbered the different series of time divisions. For instance, the twenty Ahaus are not numbered 1, 2, 3, &c., up to 20, but they were numbered 20, 1 2, 3, &c., to 19.

"If we should nowadays wish to use a similar notation, we should probably number the series 0, 1, 2, &c., 19; but it seems as though the Mayas, having no sign for 0, wrote the sign for 20 or a 'full count' of Ahaus in the first place.

"The eighteen Chuens are in like manner numbered 18, 1, 2, 3, &c., to 17, the same sign being used for a 'full count' of Chuens as is used for a 'full count' of Ahaus.

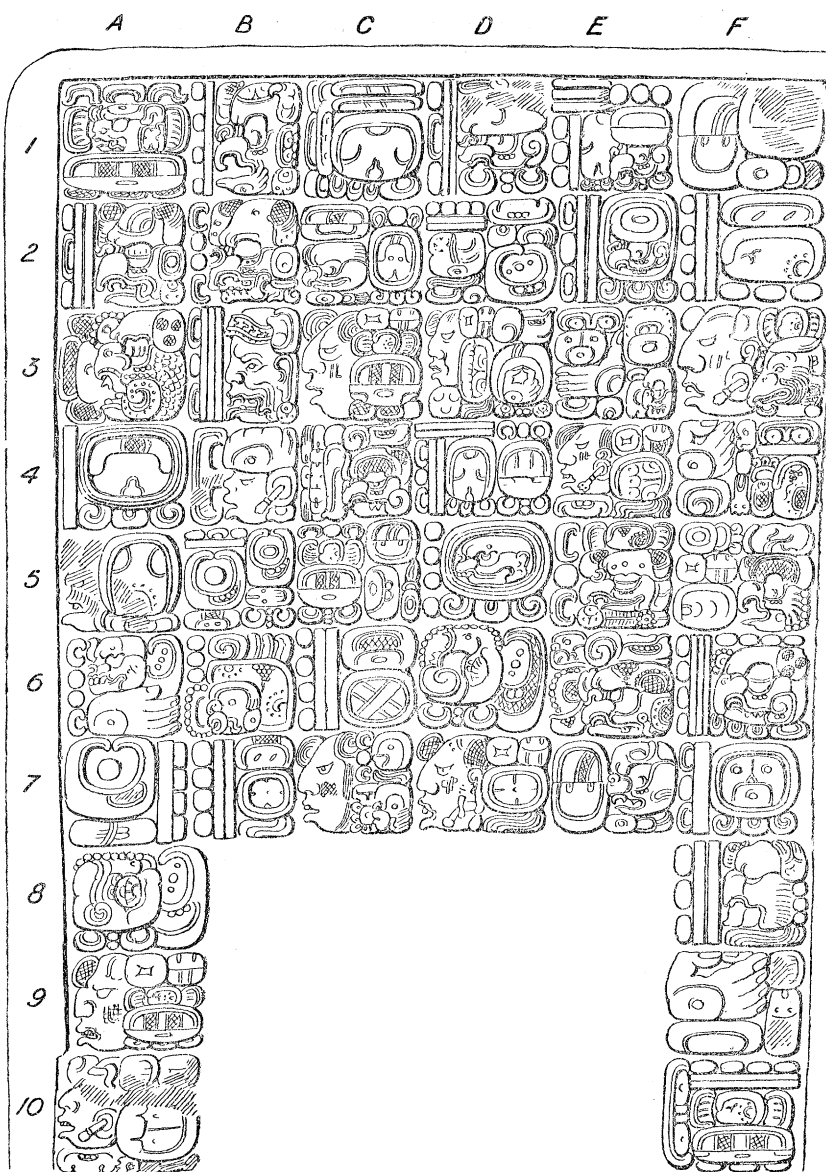
"As a 'full count' of days (twenty) is a Chuen, a 'full count' of Chuens (eighteen) is an Ahau, and a 'full count' of Ahaus (twenty) is a Katun. The foregoing inscription may be read thus:—

"The 15th Katun of the 9th Cycle with no odd Ahaus, Chuens, or days added, begins with 4 Ahau 13 Yax.

"Had the date been one including a specified number of Ahaus, Chuens, or Days, we should have had to make use of the annual calendar.

"The faces so frequently met with in the inscriptions in connexion with Cycle, Katun, and other signs for time periods are shown by Mr. Goodman to be in reality numerals, and the whole series of numeric faces from 1 to 20 has been determined in some cases with certainty, and in others with a fair degree of probability."—August 5, 1897.]

In the month of February, when the last pages of Mr. Goodman's



Maya Inscription from Piedras Negras.

(The glyphs are read downwards in double columns from left to right.)

essay (published in the Archæological Section of the 'Biologia Centrali-Americana') were issuing from the press, I received from Mr. Teobert Maler a number of photographs of sculptures and inscriptions which he had recently discovered in Yucatan and the country to the south of it as far as the banks of the River Usumacinta.

One of these inscriptions from Piedras Negras on the Usumacinta is in a good state of preservation, and a drawing made by Miss Annie Hunter from the photographic print is here reproduced (p. 70).

As Mr. Goodman has never seen this inscription, an examination of it with the help of his notes and calendar tables will be a fair test of their value.

The following signs are figured in Mr. Goodman's essay, and will be found to agree fairly well with those in the inscription.

Cycle



= 20 Katuns.

Katun



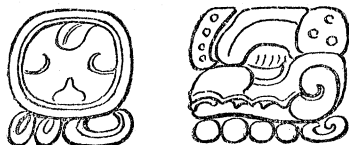
= 20 Ahaus.

Ahau



= 18 Chuens.

Chuen



= 20 Days.

Signs for the named days—



Cimi.



Cib.



Ymix.



Ahau.

Signs for the named months—



Yaxkin.



Kanin.



Uo.



Yax.



Muan.

The glyph A 1 is the initial glyph indicating the Great Cycle. It has more the appearance of the sign for the 53rd than for that of the 54th Great Cycle, but the signs for the different Great Cycles are still in need of elucidation, and the subsequent reckoning shows clearly that the dates fall within the table given by Mr. Goodman as that of the 54th Great Cycle.

The next glyph B 1 is the Cycle sign with the numeral 9 in front of it (one bar = 5 and four dots = 4).

A 2 is the Katun sign with the numeral 12 in front of it (two bars = 10, and two dots = 2; the hollow curve between the two round dots is merely used to fill up the space, and does not count).

B 2 is the Ahau sign with the numeral 2.

Turning to the tables of Mr. Goodman's chronological calendar, of which an extract showing the 10th to the 14th Katuns of the 9th Cycle is here given, we find that the first day of the—

2nd Ahau,
12th Katun,
9th Cycle,
54th Great Cycle,

falls on the day 2 Ahau, the 18th day of the month Xul (which is underlined in the table).

This is as far as the chronological calendar can guide us. We have next to find the position of this date in the annual calendar. The date can only occur once in the fifty-two years which constitute a calendar round, and an examination of the tables shows that it falls in the first year of the calendar round (where it is marked with a square).

Fifty-fourth Great Cycle.
Ninth Cycle.

Nos. of the Katuns. 10				11			12			13			14			No. of the Ahau.
No. of the Ahau.	No. of the day	Day of the month.	Name of month.	No. of the day	Day of the month.	Name of month.	No. of the day	Day of the month.	Name of month.	No. of the day	Day of the month.	Name of month.	No. of the day	Day of the month.	Name of month.	
20	1	8	Kayab	12	8	Ceh	10	8	Yaxkin	8	8	Uo	6	13	Muan	20
1	10	3	" Pax	8	3	" Zac	6	3	" Xul	4	3	" Pop	2	8	"	1
2	2	13	"	4	13	"	2	13	"	13	13	"	11	3	"	2
3	2	13	"	13	13	"	11	13	"	9	13	"	7	18	Kankin	3
4	11	8	"	9	8	"	7	8	"	5	8	"	12	3	"	4
5	4	1	"	5	1	"	3	1	"	1	1	"	8	8	"	5
6	3	18	Muan	10	18	Yax	12	18	Tzec	6	18	Uayeb	4	3	"	6
7	12	13	"	8	13	"	4	13	"	2	13	Cumhu	13	18	Mac	7
8	7	8	"	6	8	"	13	8	"	11	8	"	9	3	"	8
9	4	3	Kankin	2	3	Chen	9	3	Zotz	7	3	"	5	8	"	9
10	13	18	"	11	18	"	5	18	"	3	18	Kayab	1	18	Ceh	10
11	9	13	"	7	13	"	1	13	"	12	13	"	10	3	"	11
12	5	8	"	3	8	"	10	8	"	8	8	"	6	8	"	12
13	1	3	"	12	3	Mol	6	3	"	4	3	"	2	3	"	13
14	10	18	Mae	8	18	"	1	18	"	13	18	"	11	18	"	14
15	6	13	"	4	13	"	11	13	"	9	13	Pax	7	13	Zac	15
16	2	8	"	13	8	"	2	8	"	5	8	"	11	8	"	16
17	11	3	"	9	3	"	7	3	"	1	3	"	8	3	"	17
18	7	18	Ceh	5	18	Yaxkin	3	18	Uo	10	18	Muan	12	3	"	18
19	3	13	"	1	13	"	12	13	"	8	13	"	8	18	Yax	19

Archaic Annual Calendar.

1st Year.

Names of the months		Pop.	Uo.	Zip.	Zotz.	Tzec.	Xul.	Yaxkin.	Mol.	Chen.	Yax.	Zac.	Ceh.	Mac.	Kankin.	Muan.	Pax.	Kayab.	Cumhu.	Uayeb.
Names of the days.																				
20	Ik	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10
1	Akbal	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11
2	Kan	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12
3	Chicchan	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13
4	Cimi	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1
5	Manik	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2
6	Lamat	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3
7	Muluc	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4
8	Oc	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5
9	Chuen	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6
10	Eb	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7
11	Ben	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8
12	Ix	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9
13	Men	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10
14	Cib	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11
15	Caban	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12
16	Ezenab	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13
17	Cauac	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1
18	Ahau	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2
19	Ymix	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3

The next glyph in the inscription A 3 is the Chuen sign with the sign which signifies a "full count" of Chuens, in front of it. As a full count of Chuens is 18 and equals 1 Ahau, and as the number of Ahau has already been recorded, the glyph A 3 means that no odd Chuens are to be added to the date already expressed.

The glyph B 3 is the sign for a day (of twenty-four hours) preceded by the numeral 16.

Turning to the first year of the annual calendar, we now add these 16 days to 2 *Ahau* 18 *Xul*, the date already arrived at, and it will be found to bring us to 5 *Cib* 14 *Yaxkin* (marked with a circle).

That this reckoning is correct is shown by the inscription itself where the result is expressed; A 4 being 5 *Cib*, and B 7 14 *Yaxkin*. The six glyphs in the inscription intermediate between the sign of the day *Cib*, and the sign of the month *Yaxkin*, have not yet been thoroughly deciphered, but there is reason to suppose that they contain a parallel reckoning differently expressed.

The next three glyphs are undeciphered; then comes another reckoning:—

C 1 is the Chuen sign with the numeral 10 (two bars = 10) above it, and a "full count" sign at the side. Whether the 10 applies to the Chuens or days can only be determined by experiment, and such experiment in this case shows that the reckoning intended to be expressed is 10 Chuens and a "full count" of days, that is for practical purposes 10 Chuens only, for as in the last reckoning when the full count of Chuens was expressed in the Ahau, so here the full count of days is expressed in the Chuens.

The next glyph D 1 is an Ahau sign, preceded by the numeral 12.

This gives us—

$$12 \text{ Ahau } (12 \times 360) = 4320 \text{ days.}$$

$$10 \text{ Chuens } (10 \times 20) = 200 \text{ ,,}$$

$$4520 \text{ days.}$$

$$4380 \text{ ,,} = 12 \text{ years.}$$

$$140 \text{ days.}$$

Adding 4520 days, or 12 years and 140 days, to the date 5 *Cib* 14 *Kankin*, it brings us to the date 1 *Cib* 14 *Kankin* in the thirteenth year of the annual calendar.

Turning to the inscription we find at C 2 (passing over the first half of the glyph), 1 *Cib* followed by (the first half of D 2) 14 *Kankin*, the date at which we have already arrived by computation.

13th Year.

	Names of the months	Pop.	Uo.	Zip.	Zotz.	Tzec.	Xul.	Yaxkin.	Mol.	Chen.	Yax.	Zac.	Ceh.	Mac.	Kan kin.	Muan.	Pax.	Kayab.	Cumhu.	Uayeb.	
20	Ik	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	20
1	Akbal	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	1
2	Kan	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	2
3	Chicchan	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	3
4	Cimi	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	4
5	Manik	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	5
6	Lamat	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	6
7	Muluc	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	7
8	Oc	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	8
9	Chuen	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	9
10	Eb	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	10
11	Ben	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	11
12	Ix	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	12
13	Men	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	13
14	Cib	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	14
15	Caban	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	15
16	Ezenab	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	16
17	Cauac	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	17
18	Anau	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	18
19	Ymix	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	19

35th Year.

Names of the months		Pop.	Uo.	Zip.	Zotz.	Tzec.	Xul.	Yaxkin.	Mol.	Chen.	Yax.	Zac.	Ceh.	Mac.	Kankin.	Muan.	Pax.	Kayab.	Cumhu.	Uayeb.	
Names of the days.																					
20	Eb	.....	9	3	10	4	11	5	12	6	13	4	1	8	2	9	3	10	4	11	5
1	Ben	.....	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6
2	Ix	.....	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7
3	Men	.....	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8
4	Cib	.....	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9
5	Caban	.....	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10
6	Ezenab	.....	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11
7	Cauac	.....	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12
8	Ahau	.....	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13
9	Ymix	.....	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1
10	Ik	.....	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2
11	Akbal	.....	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3
12	Kan	.....	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4
13	Chicchan	.....	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5
14	Cimi	.....	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6
15	Manik	.....	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7
16	Lamat	.....	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8
17	Muluc	.....	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9
18	Oc	.....	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10
19	Chuen	.....	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11

38th Year.

Names of the months	Pop.	Uo.	Zip.	Zotz.	Tzec.	Xul.	Yaxkin.	Mol.	Chen.	Yax.	Zac.	Ceh.	Mac.	Kankin.	Muan.	Pax.	Kayab.	Cumhu.	Uayeb.
<i>Names of the days.</i>																			
20 Manik	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8
1 Lamat	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9
2 Muluc	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10
3 Oc	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11
4 Chuen	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12
5 Eb	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13
6 Ben	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1
7 Ix	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2
8 Men	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3
9 Cib	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4
10 Caban	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5
11 Ezenab	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6
12 Cauac	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7
13 Ahau	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8
14 Ymix	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9
15 Ik	1	8	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10
16 Akbal	2	9	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11
17 Kan	3	10	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12
18 Chicchan	4	11	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13
19 Cimi	5	12	6	13	7	1	8	2	9	3	10	4	11	5	12	6	13	7	1

Passing over the next three glyphs we arrive at another reckoning, D 4 gives 10 days, 11 Chuens, 1 Ahau, and the first half of C 5 gives 1 Katun.

1 Katun	7200 days.
1 Ahau	360 „
11 Chuens (11 × 20)	220 „
10 Days	10 „
<hr/>	
	7790 days.
	7665 „ = 21 years.
<hr/>	
	125 days.

Adding 7790 days or 21 years and 125 days to the previous date, 1 *Cib* 14 *Kankin*, it will bring us to 4 *Cimi* 14 *Uo* in the thirty-fifth year of the annual calendar, and we find this date expressed in the inscription in the glyphs D 5 and C 6.

Passing over the next three glyphs we arrive at another reckoning (E 1), 3 Ahaus, 8 Chuens, 15 days:—

3 Ahaus	1080 days.
8 Chuens.....	160 „
15 Days.....	15 „
<hr/>	
	1255 days.
	1095 „ = 3 years.
<hr/>	
	160 days.

Adding 3 years and 160 days to the last date, 4 *Cimi* 14 *Uo*, brings us to 11 *Ymix* 14 *Yax* in the thirty-eighth year of the annual calendar; this is the date we find expressed in the glyphs E 2 and F 2 of the inscription.

It is true that in the sign in the glyph E 2 is not the sign usually employed for the day Ymix, but that it is a day sign we know from the fact that it is included in a cartouche, and I am inclined to think that the more usual Ymix sign (something like an open hand with the fingers extended) was inclosed in the oval on the top of the grotesque head, but it is too much worn for identification.

Passing over seven glyphs, the next reckoning occurs at F 6, which gives:—

4 Chuens	80 days.
19 Days	19 „
<hr/>	
	99 days.

Adding 99 days to the last date, 11 *Ymix* 14 *Yax*, brings us to 6 *Ahau* 13 *Muan* in the same year, and we find this date expressed in F 7 and F 8.

The last glyph in the inscription is a Katun sign with the numeral 14 above it, and a sign for "beginning" in front of it, and indicates that the last date is the beginning of a 14th Katun. If we turn to the table for the 9th Cycle of the 54th Great Cycle, from which we started, it will be seen that the 14th Katun of that cycle does commence with the date 6 *Ahau* 13 *Muan*.

It is simply impossible that the identity of the dates expressed in the inscription with those to which the computations have guided us can throughout be fortuitous. Very nearly half of the forty-eight glyphs in the inscription have been accounted for, and I have no doubt that when the inscription passes under Mr Goodman's scrutiny he will be able to give us much information about the remaining glyphs which I have passed over as undeciphered.

It can, I think, therefore, be fairly claimed for Mr. Goodman that his researches have raised the veil of mystery which has for so long hung over the carved hieroglyphic writing of the Mayas.

"Influence of Acids and Alkalies upon the Electrotonic Currents of Medullated Nerve." By AUGUSTUS D. WALLER, M.D., F.R.S. Received June 10,—Read June 17, 1897.

A. *The Effect of Acids and of Alkalies.*

Considering that electrotonic currents are characteristic of living medullated nerve, that such currents are due to electrolytic polarisation, and that such electrolysis must primarily consist in a liberation of electronegative principles (oxygen, acid, &c.) at the anode, and of electropositive principles (hydrogen, base, &c.) at the kathode, the first and most obvious test to be made is to examine comparatively the action of acids and bases upon anelectrotonic and katelectrotonic currents.

On the supposition that a medullated nerve-fibre is composed of two different electrolytes, white fatty sheath and grey proteid axis, and that electrolytic polarisation is aroused at the interface of separation between these two electrolytes, we may expect to find, as the characteristic acidic effect, diminution of A and increase of K, and as the characteristic basic effect, increase of A and diminution of K.

This expectation is in the main substantiated by experiment, although owing to the somewhat narrow range of concentration within which moderate effects are produced, it is not common to obtain effects in both of the two opposite directions in a single experiment. The reagent may be too weak, in which case neither A nor K are altered, or it may be too strong, in which case both A



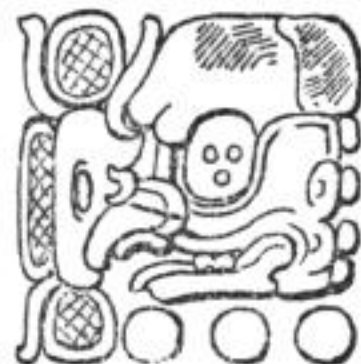
1.



2.



3.



4.



5.



6.



7.



8.

(1) The Great Cycle sign. (2) The Cycle. (3) The Katun. (4) The Ahau.
 (5) The Chuen. (6) The Day. (7) The named day. (8) The named month.

A

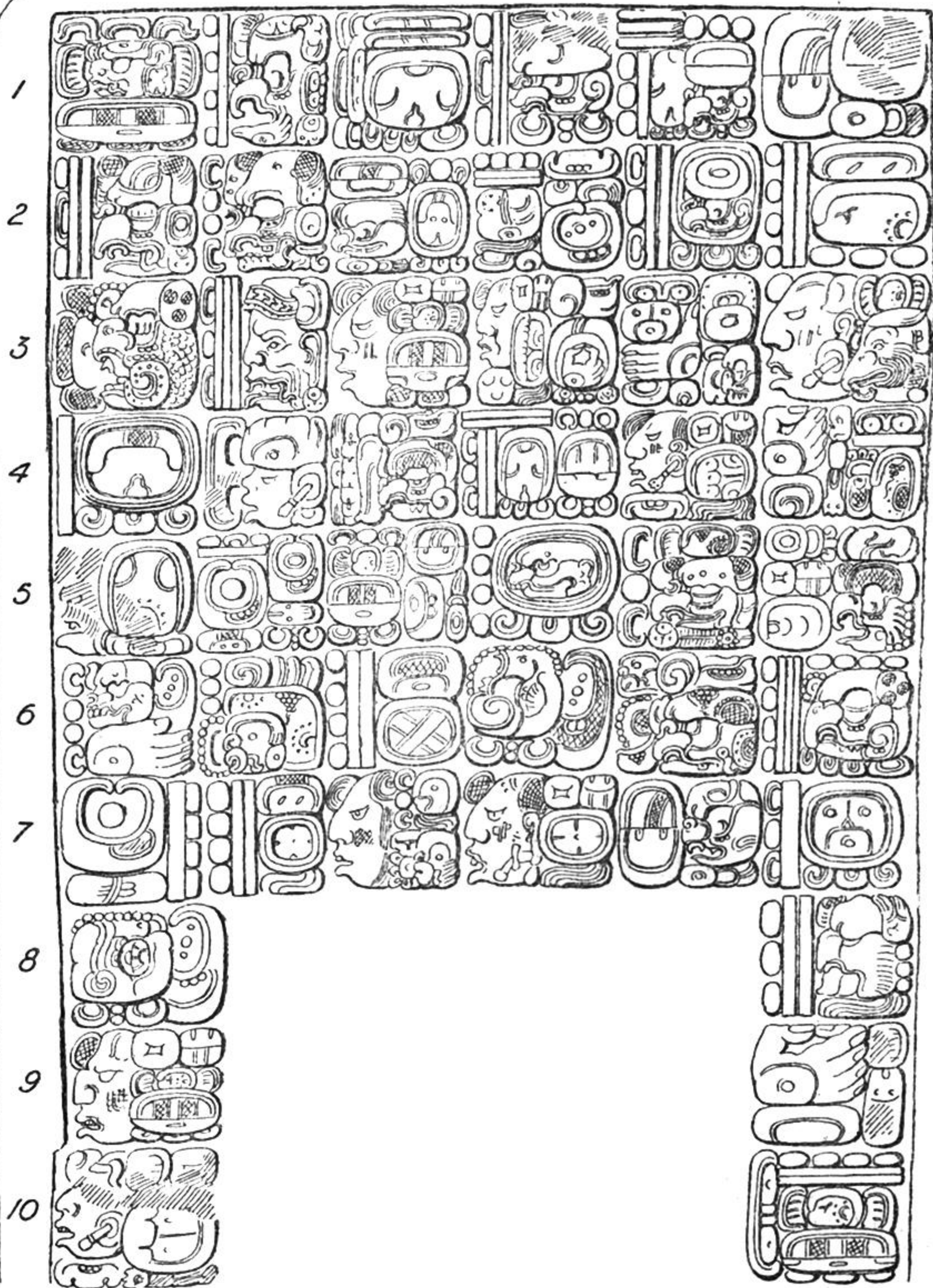
B

C

D

E

F



Maya Inscription from Piedras Negras.

(The glyphs are read downwards in double columns from left to right.)

Cycle



= 20 Katuns.

Katun



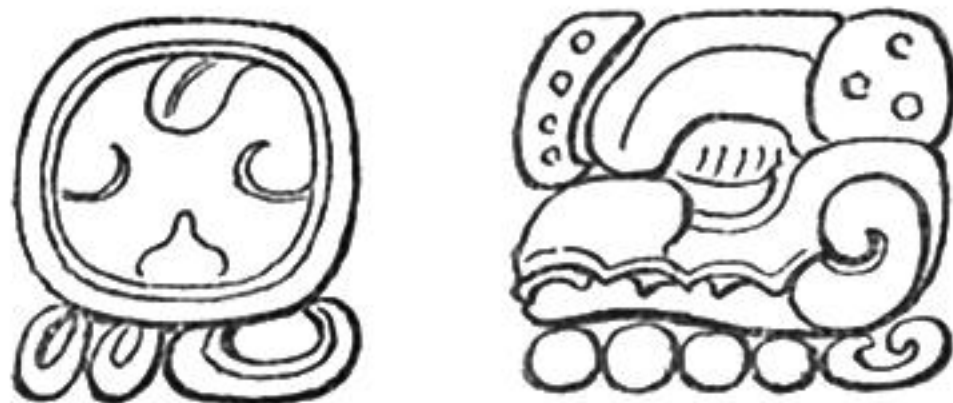
= 20 Ahaus.

Ahau



= 18 Chuens.

Chuen



= 20 Days.

Signs for the named days—



Cimi.



Cib.



Ymix.



Ahau.

Signs for the named months—



Yaxkin.



Kankin.



Uo.



Yax.



Muan.